Redvision™

X-IP-SERIES

X-IP-SERIES USER MANUAL

Products Covered:

RVX-IP-SERIES	PTZ Positioning Camera
RVX-IP-PSU	Power Supply
RVX-IP PSU-ALM16	Power Supply with Alarm Module
RVX-IP-PSU-ALM16-W	PSU with Wireless PIR module

[RVX IP v1.1]

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1 INSTALLING THE CAMERA HEAD

1.1 PTZ CONFIGURATION – CONVERTING BALL CAMERA TO DOME CAMERA

The RVX Series can be mounted as a dome or ball PTZ configuration. To convert the dome to ball PTZ remove the M4 button head screws with 2.5mm allen key provided. See FIG A below.

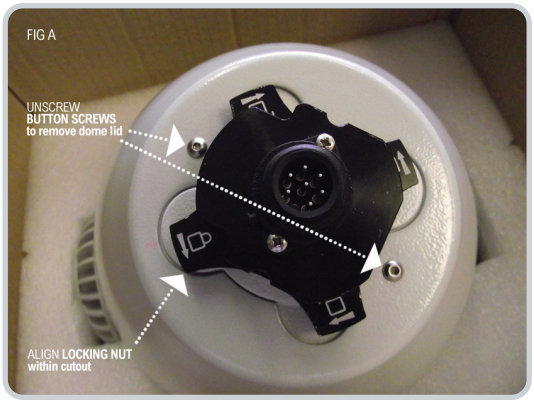


FIG B MOUNTING ORIENTATION

OBSERVE THE FOLLOWING PRECAUTIONS WHEN INSTALLING:

1. Mount the Camera in a position where it cannot be be interfered with either intentionally or accidentally.
2. The mounting surface should be capable of supporting the weight of both the Camera and mounting brackets under all expected conditions of load, vibration and temperature.
3. The mounting brackets should be fitted in accordance with instructions and should observe all appropriate safety precautions & local building regulations.
4. Ensure the Camera is in the correct orientation, see FIG B above.

1.2 ATTACHING CAMERA TO BRACKET

BRACKET INSTALLATION:

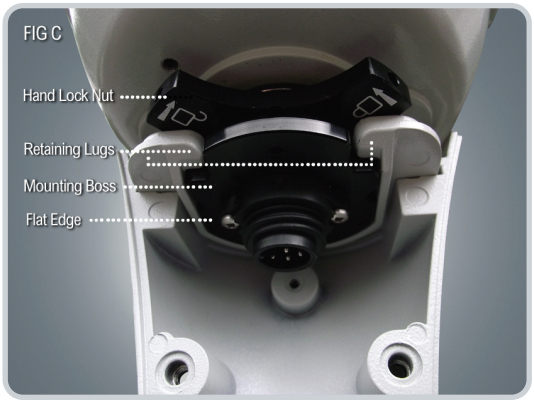
Fixings to the various bracket types will depend on the fixing surface. It is important to use adequate quality fixings to safely support the complete Dome/Ball PTZ assembly. Fixing slots on a 4" PCD provide adequate clearance for 6mm bolts if attaching the Pedestal or Swan Mount to the mast.

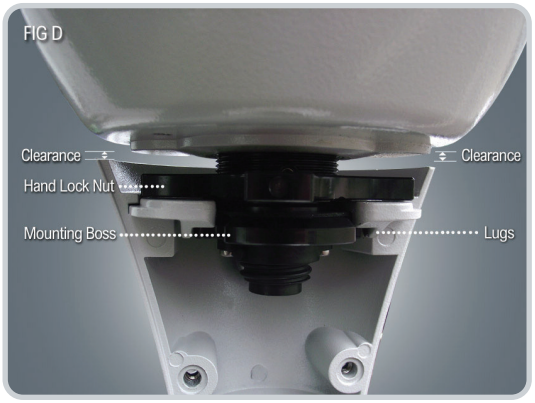
FLYING LEAD:

If using a Swan/Pedestal/Pendant Mount, install the Fly Lead optionally through the Central Mounting Tube or via a 20mm Gland Entry Point. The Gland Entry is supplied with a 20 x 1mm thread to accomodate industry standard 20mm Glands.

ATTACHING CAMERA TO THE BRACKET: See Fig C & D below

1. Remove Mount Cover Plate.
2. Fully unscrew Hand Lock Nut.
3. Offer Camera to Bracket. The Mounting Boss orientation is important and should match the picture in FIG C & D below. i.e The Flat Edge should be positioned to the rear and the Retaining Lugs engaged in the Boss Cut Outs.
4. If RV-PED (Pedestal) is being used support the Camera with hand when tightening the Hand Lock Nut - ensure the Hand Lock Nut is fully tightened.
5. Ensure the Clearance is even throughout 360° rotation and the Camera is free moving.
6. Replace Mount Cover Plates.





1.3 BRACKET TYPES

RV-SWAN (Swan mount), RV-WALL (Wall mount), RV-PNDT (Pendant mount), RV-PED (Pedestal for mast/tower mount).

TECH SUPPORT COMMENT: **It is important to configure software settings to the camera orientation (Basic Configuration > Mounting Orientation) i.e. is the Camera hanging down or upright?**

'hanging down' would be using one of the following bracket types :

- **swan [RV-SWAN] ,**
- **pendant [RV-PNDT]**
- **or wall [RV-WALL] - NOT SUITABLE FOR UPRIGHT MOUNTING**

'Upright' would be using the pedestal bracket [RV-PED]

1.4 HOW TO CANTILEVER ARMS FORWARD

1. Remove pear shaped badge on each arm using small flat head screw driver.
2. Slightly loosen by one turn (BUT DO NOT REMOVE) the allen screws.
3. Cantilever the Ball Arms forward to 'STOP' position.
4. Tighten allen screws.
5. Replace badges (spares are provided).
6. See Section 6.1.3.1.2 and from the SET UP MENU select either 'UPRIGHT ARMS OUT' or 'HANGING ARMS OUT'

2 HOW TO CONFIGURE THE CAMERA INTERFACE

NO HARDWARE CONFIGURATION OF THE CAMERA IS REQUIRED.
ALL OPTIONS ARE SET VIA THE IP INTERFACE WHEN THE CAMERA IS COMMISSIONED.

3 POWER SUPPLY INSTALLATION & SETUP

WARRANTY & SAFETY NOTICE: DISCONNECT ALL POWER BEFORE OPENING OR WORKING ON THE POWER SUPPLY UNIT. INSTALLATION MUST BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON.

Camera Warranty is void unless it is installed using one of the following Redvision power supplies and a Redvision supplied fly lead (Composite cable): Using the wrong type of 3rd party PSU could compromise safety and damage the camera unit.

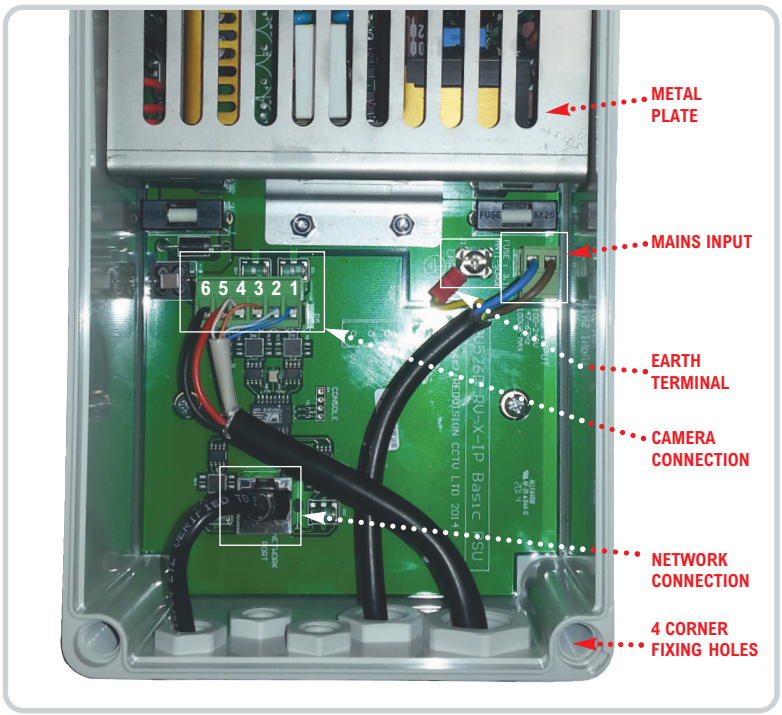
- RVX-IP-PSU • RVX-!P-PSU-ALM16 • RVX-IP-PSU-ALM16-W

The RVX Power Supplies are compatible with the following X-Series Cameras:
RVXIP30, RVXIP30-W, RVXIP30-IR, RVXIP30-IR-W, RVXIP30-IRWL, RVXIP30-IRWL-W.

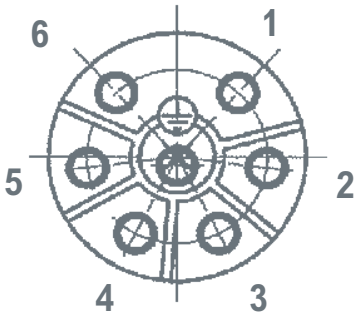
UMBILICAL CABLE: A pre-made composite cable with a 7 way female amphenol connector is supplied with all Redvision brackets. The female connector connects directly to the male connector on the RVX PTZ IP Camera housing.

- Mount the Redvision PSU in a position so it cannot be interfered with intentionally or accidentally. Ideally use a lockable cabinet.
- Securely fix the Redvision PSU using appropriate size screws and ensure the cable glands have sufficient clearance to allow the cables to enter.
- All cables should be channelled through the appropriate sized gland holes.
- Only use Redvision supplied umbilical cables for connecting the X-IP-SERIES ball/PTZ dome & Redvision IP PSU. Warranty will be void if these cables are extended between the PTZ/dome unit and PSU. Extending cables could also compromise safety.

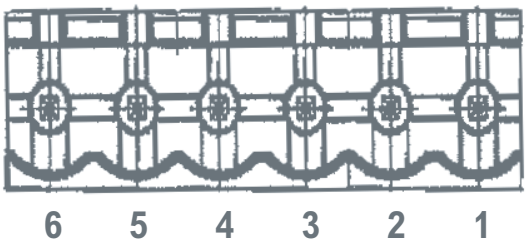
Follow the colour coding idents as shown in table on page 4 for terminating the fly lead in the power supply.



The Redvision power supply (part code: RVX-IP_PSU) outputs 24V DC &is supplied in a weather proof ABS box rated IP67.



Amphenol Connector Pinout
(Male mating side pictured)



Terminal Block Pinout
(Male mating side pictured)

Follow the colour coding idents as shown in table below for terminating the fly lead in the power supply.

AMPHENOL PIN NO.	WIRE COLOUR	SIGNAL	PSU CONNECTOR PIN NO.
1	Orange	Camera TxN - Transmit Data negative	3
2	Orange/White	Camera TxP - Transmit Data positive	4
3	Blue	Camera RxN - Receive Data negative	1
4	Blue / White	Camera RxP - Receive Data positive	2
5	-	Key for cable ident.	-
6	Red	24V Power	5
7	Black	0V Power (Ground)	6

NOTE: Signal names depend on context, TxN (Transmit Data Negative) for the camera is RxN (Receive Data Negative) for the PSU or Alarm Unit.

The Redvision Power Supply (part code: RVX-IP_PSU) outputs 24V DC & is supplied in a weather proof ABS box rated IP67.

3.1 REDVISION IP POWER SUPPLY (RVX-IP-PSU)

3.1.1 SUPPLY VOLTAGE

3.1.1.1 INPUT VOLTAGE
Mains input :110V/230V @ 0.5A

3.1.1.2 OUTPUT VOLTAGE
Output @ Camera connector : 24Vdc @ 3A nominal

3.1.2 RVX-IP-PSU INTERNAL CONNECTIONS

3.1.2.1 MAINS POWER INPUT

PCB IDENT	MAINS POWER
LIVE	LIVE (BROWN) 110/230Vac Connection via 2 way terminal block
NEUTRAL	NEUTRAL (BLUE) Connection via 2 way terminal block
EARTH	GREEN/YELLOW Connection via terminal screw

NOTE: Earth connection requires 4mm red spade loop (supplied with PSU) to be fitted by engineer at installation.
SAFETY: ENSURE MAINS INPUT & EARTH CONNECTIONS ARE SECURELY STRAIN RELIEVED.

3.1.2.2 CAMERA CONNECTION

6 Way Terminal Block

PIN NO.	PCB IDENT	WIRE COLOUR	SIGNAL
1	TxN	Blue / White	PSU TxN / Camera RxN
2	TxP	Blue / White	PSU TxP / Camera RxP
3	RxN	Orange	PSU RxN / Camera TxN
4	RxP	Orange / White	PSU RxP / Camera TxP
5	24V	Red	
6	GND	Black	

NOTE: Signal names depend on context, TxN (Transmit Data Negative) for the camera is RxN (Receive Data Negative) for the PSU or Alarm Unit.

3.1.2.3 NETWORK CONNECTION

RJ45 SOCKET

This socket is a typical Ethernet 100BASE-T type, for connection of a 'Cat 5' cable, wired to the T568A or T568B scheme. The typical wire colours noted below are of the T568B scheme.

The camera supports automatic polarity and automatic crossover (Auto MDI/MDIX) to simplify installation cabling.

Due to the multiple interconnections required for the PTZ unit and power supply, the maximum specified cable run from the PSU to network hub or switch is 50m. For longer cable runs, the Alarm PSU (RVX-IP-ALM) includes a repeater and offers operation up to at least 100m.

The use of high quality Cat5e or Cat6 cable to connect to the network is highly recommended for reliable operation.

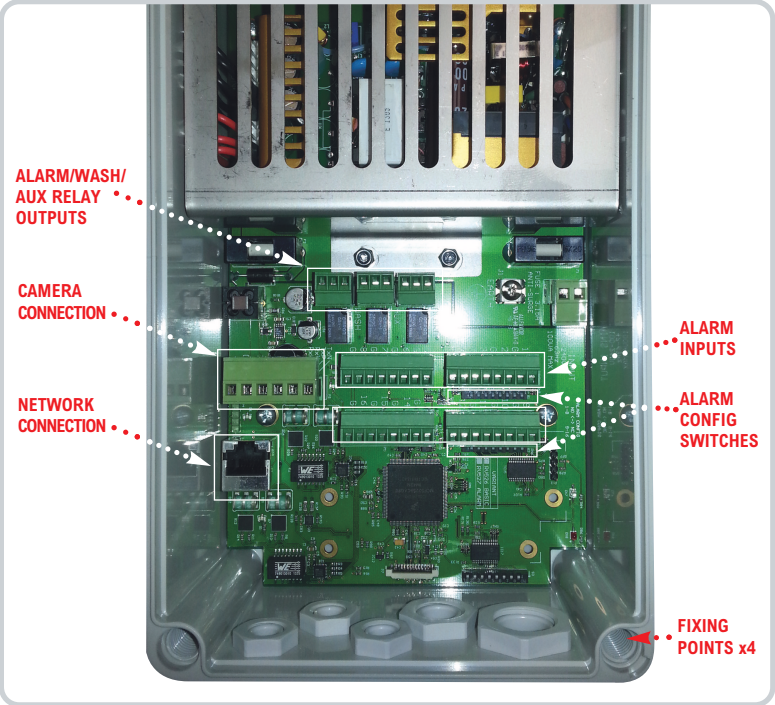
PIN NO.	PCB IDENT	WIRE COLOUR
1	TxP	White / Orange
2	TxN	Orange
3	RxP	White / Green
4	-	Blue
5	-	White / Blue
6	RxN	Green
7	-	White / Brown
8	-	Brown

3.1.3 FUSE PROTECTION

PCB IDENT	DESCRIPTION
F1	Mains input fuse 3.15A - Anti Surge
F2	Camera fuse 3.15A - Fast Blow

3.2 REDVISION IP POWER SUPPLY WITH ALARM MODULE (RVX-IP-PSU-ALM)

WARRANTY & SAFETY NOTICE:
DISCONNECT ALL POWER BEFORE OPENING OR WORKING ON THE RVX-PSU-ALM16 POWER SUPPLY UNIT WITH EMBEDDED ALARM CARD. THIS PROTECTS HIGH VOLTAGE COMPONENTS. INSTALLATION MUST BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON.



3.2.1 SUPPLY VOLTAGE

3.2.1.1 INPUT VOLTAGE

Mains input: 110V/230V @ 0.5A

3.2.1.2 OUTPUT VOLTAGE

Output @ Camera connector: 24Vdc @ 3A nominal

3.2.2 RVX-IP-PSU-ALM INTERNAL CONNECTIONS

3.2.2.1 MAINS POWER INPUT

PCB IDENT	MAINS POWER
LIVE	LIVE (BROWN) 110/230Vac Connection via 2 way terminal block
NEUTRAL	NEUTRAL (BLUE) Connection via 2 way terminal block
EARTH	GREEN/YELLOW Connection via terminal screw

NOTE: Earth connection requires 4mm red spade loop (supplied with PSU) to be fitted by engineer at installation.
SAFETY: ENSURE MAINS INPUT & EARTH CONNECTIONS ARE SECURELY STRAIN RELIEVED.

3.2.2.2 CAMERA CONNECTION

6 Way Terminal Block

PIN NO.	PCB IDENT	WIRE COLOUR	SIGNAL
1	TxN	Blue	PSU TxN / Camera RxN
2	TxP	Blue / White	PSU TxP / Camera RxP
3	RxN	Orange	PSU RxN / Camera TxN
4	RxP	Orange / White	PSU RxP / Camera TxP
5	24V	Red	
6	GND	Black	

NOTE: Signal names depend on context, TxN (Transmit Data Negative) for the camera is RxN (Receive Data Negative) for the PSU or Alarm Unit.

3.2.2.3 NETWORK CONNECTION

RJ45 SOCKET

This socket is a typical Ethernet 100BASE-T type, for connection of a 'Cat 5' cable, wired to the T568A or T568B scheme. The typical wire colours noted below are of the T568B scheme.

The camera supports automatic polarity and automatic crossover (Auto MDI/MDIX) to simplify installation cabling.

The Alarm PSU includes an active Ethernet repeater, consequently the maximum specified cable run from the PSU to network hub or switch is 100m.

The use of high quality Cat5e cable to connect to the network is highly recommended for reliable operation.

PIN NO.	PCB IDENT	WIRE COLOUR
1	TxP	White / Orange
2	TxN	Orange
3	RxP	White / Green
4	-	Blue
5	-	White / Blue
6	RxN	Green
7	-	White / Brown
8	-	Brown

3.2.2.4 ALARM INPUTS

Four 8 Way screw terminal block connectors.

Terminal No.	P19	P18	P17	P16
1	Alarm 1 Signal	Alarm 5 Signal	Alarm 9 Signal	Alarm 13 Signal
2	Alarm 1 Ground	Alarm 5 Ground	Alarm 9 Ground	Alarm 13 Ground
3	Alarm 2 Signal	Alarm 6 Signal	Alarm 10 Signal	Alarm 14 Signal
4	Alarm 2 Ground	Alarm 6 Ground	Alarm 10 Ground	Alarm 14 Ground
5	Alarm 3 Signal	Alarm 7 Signal	Alarm 11 Signal	Alarm 15 Signal
6	Alarm 3 Ground	Alarm 7 Ground	Alarm 11 Ground	Alarm 15 Ground
7	Alarm 4 Signal	Alarm 8 Signal	Alarm 12 Signal	Alarm 16 Signal
8	Alarm 4 Ground	Alarm 8 Ground	Alarm 12 Ground	Alarm 16 Ground

All alarm inputs are 'volt free' and **MUST NOT** be connected to any powered contacts. Permanent damage may result from failure to correctly connect the alarm inputs.

NOTE: The 'Alarm xx Ground' connections are all common on the PCB and connected to the PSU ground.

3.2.2.5 AUXILIARY OUTPUTS

Three sets of NO/NCAuxiliary Output contacts are provided (ALARM / AUX / WASH). Each set of contacts are isolated, and useable for any circuit within the following limitations:-

Rated load	:	0.5A @ 125 Vac / 1.0A @ 24Vdc Resistive
Max. carrying current	:	2A
Max. switching Current	:	1A
Max. switching Power	:	62.5VA, 30W
Contact Resistance	:	100mOhm max.

ALARM contacts are operated whenever any alarm signal is active.

WASH contacts are operated under operator control for camera lens washing.

AUX contacts are configurable in the camera setup to operate under various scenarios.

3.2.3 FUSE PROTECTION

PCB IDENT	DESCRIPTION
F1	Mains input fuse 3.15A - Anti Surge
F2	Camera fuse 3.15A - Fast Blow

3.2.4 ALARM CONFIGURATION SWITCH SETTINGS

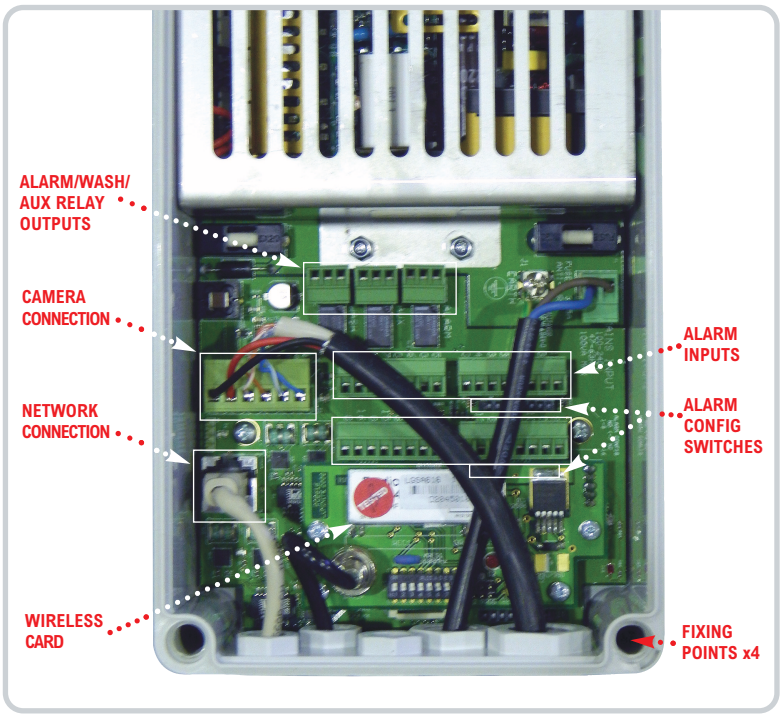
Switches S1 & S2 are used to configure each alarm input channel as Normally Open (N.O.) or Normally Closed (N.C.)

POSITION	SWITCH S1	SWITCH S2
1	Alarm 1	Alarm 9
2	Alarm 2	Alarm 10
3	Alarm 3	Alarm 11
4	Alarm 4	Alarm 12
5	Alarm 5	Alarm 13
6	Alarm 6	Alarm 14
7	Alarm 7	Alarm 15
8	Alarm 8	Alarm 16

In each case, set the switch to ON for Normally Open operation, and OFF for Normally Closed.

NOTE: Where fitted, it may be necessary to remove the Wireless add-on card in order to gain access to the S2 switch for configuration. Ensure that power is disconnected from the PSU module before removing the wireless card.

3.3 WIRELESS ALARM PSU (RVX-IP-PSU-ALM-W)



WARRANTY & SAFETY NOTICE:
DISCONNECT ALL POWER BEFORE OPENING OR WORKING ON THE RVX-PSU-ALM16 POWER SUPPLY UNIT WITH EMBEDDED ALARM CARD. THIS PROTECTS HIGH VOLTAGE COMPONENTS. INSTALLATION MUST BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON.

The Redvision Wireless Card is compatible with the Redvision Wireless PIR, Luminite Genesis Range and the Redwall Wireless Transmitter Module Part Code WF434T, (wireless enabled Redwall PIRs).

For the main specification and connection information for the WIRELESS ALARM PSU (RVX-IP-PSU-ALM-W), refer to diagram. This section deals with the additional functions of the Wireless module.

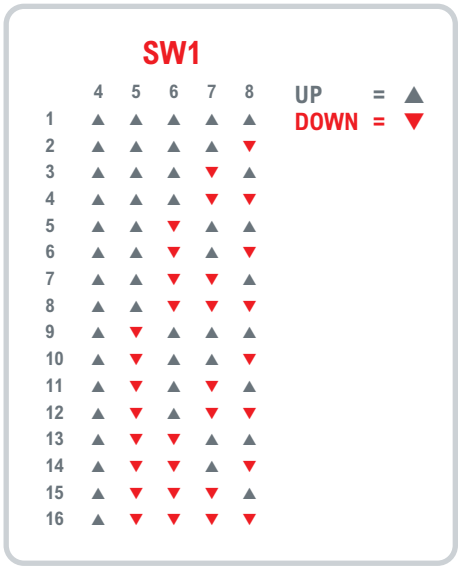
3.3.1 RVX-IP-PSU-ALM-W INTERNAL CONNECTIONS (ADDITIONAL)

3.3.1.1 ANTENNA CONNECTOR

BNC Connector, 50Ohm type

3.3.2 CONFIGURING WIRELESS ALARM MODULE

3.3.2.1 DIP SWITCH SETTINGS



- 1 to 3 dip switches are not used & should be left ‘ON’
- Switches 4 to 8 (Dome Head Site Code) provide up to 32 (1 to 16 shown in the table above) channels of wireless transmission to enable alarm activation.
- The transmission needs to be matched between the Dome Head Site Code on the wireless alarm module & the Site Code within the PIR detector (see separate PIR installation guide supplied with the PIR).
- One or more domes wil respond to any wireless PIR within range providing the Dome Head Site Code & corresponding PIR Site Code match.

3.3.2.2 AERIAL

3.3.2.2.1 POSITIONING OF RVX-IP-PSU-ALM16-W

To maximise the transmission range install the PSU externally with the aerial pointing through the gland towards the ground. An optional booster aerial (RV-AE434) can be used to significantly improve signal and range. It is recommended to use the booster aerial if the PIRs are installed on metal clad buildings.

3.3.2.2.2 RETRO FITTING WIRELESS ALARM RECEIVER

If retrofitting a wireless alarm receiver card onto an existing 16 way alarm module (RVX-IP-PSU-ALM16-W) observe the following steps:

- ISOLATE POWER FROM PSU - you cannot hot swap wireless alarm module.
- Align Wireless Alarm Module with P3 Connector and secure with M3 fixings.
- Thread aerial antenna through gland and connect to BNC on Wireless Receiver.
- See Table 19, for DIP switch settings.

4 CAMERA SETUP

Initial setup of the camera is most easily performed via the web interface, using a direct connection from a PC to the RJ45 socket in the power supply module. The camera may also be configured over the installation network.

4.1 CONNECTING TO THE CAMERA

4.1.1 DIRECT CABLE CONNECTION

This method of connecting to the camera uses a default connection address, called the Link Local IP Address. This connection is independent of any user configuration that has been done, and should always allow the installer to contact a camera by direct connection, regardless of any previous changes made to the system.

The required Local Link IP Address can be determined from the device serial number or the MAC address of the camera (which should both be noted on the camera paperwork or packaging). Alternatively, a 'discovery tool' is available to find connection parameters for unknown or misconfigured devices.
Calculate the Local Link IP address as follows :-

IP = 169 . 254 . xxx . yyy

where

yyy = 1 + (serial number mod 128)
xxx = 1 + ((serial number divided by 128) mod 128)

e.g.

Serial Number = 123456
123456 / 128 = 964 remainder 64
so yyy = 65
964 / 128 = 7 remainder 68
so xxx = 69

Local Link IP Address = 169.254.69.65

NOTE: The Redvision IP Camera Discovery Tool can be used to calculate Local Link default addresses from a camera MAC address or Serial Number. OTHER THIRD PARTY DOWNLOADS ARE AVAILABLE, SUCH AS 'ANGRY IP': http://www.angryip.org/download

Connect the PC Wired LAN port directly to the RJ45 socket in the PSU, using a Cat5/5e patch lead. This can be either a 'direct' or 'crossover' type cable. Set the network configuration of the PC to the following values :-

IP Address	:	169.254.1.254
Network Mask	:	255.255.0.0
Gateway (Broadcast)	:	169.254.1.254
WINS (pri)	:	Not Required
WINS (sec)	:	Not Required
DNS (pri)	:	Not Required
DNS (sec)	:	Not Required

Power up the camera, and wait at least 2 minutes before attempting to configure the camera.

4.1.2 LAN CONNECTION USING LOCAL NETWORK WITH DHCP SERVER.

A factory-fresh dome is preconfigured to attempt to obtain a suitable network address and configuration from a network DHCP server.

Connect the RJ45 socket in the PSU to a network LAN port, using a Cat5/5e patch lead. This can be either a 'direct' or 'crossover' type cable. Camera initial configuration should be automatic.

The connection address of the camera may be found by interrogating the DHCP server (consult local IT support staff) or by use of the Redvision IP Camera Discovery Tool run on a Windows based PC on the local network.

Power up the camera, and wait at least 2 minutes before attempting to configure the camera.

4.1.3 LAN CONNECTION WITHOUT LOCAL DHCP SERVER

Due to the large number of variations possible in the network structure, it is difficult to predict if the camera will be contactable using the Local Link IP address in a given network. The simplest solution in this case is to use the 'Direct Cable Connection' method below to configure the camera for a fixed IP address in a useable range (consult local IT support) before connecting the camera directly to the local network.

4.1.4 DIRECT CABLE CONNECTION WITH DHCP

If required, it is possible to operate a standalone DHCP server on a computer used for camera configuration, as an alternative to using the Link Local addressing scheme. Various DHCP server software is available for different operating systems. For Windows based PCs, one suitable free option is “DHCP Server for Windows” from http://www.dhcpserver.de/ . No specific setup help can be offered here as each software will be different, but usually setting a 'pool' range of only 1 address will mean any camera connected will be assigned the same address.

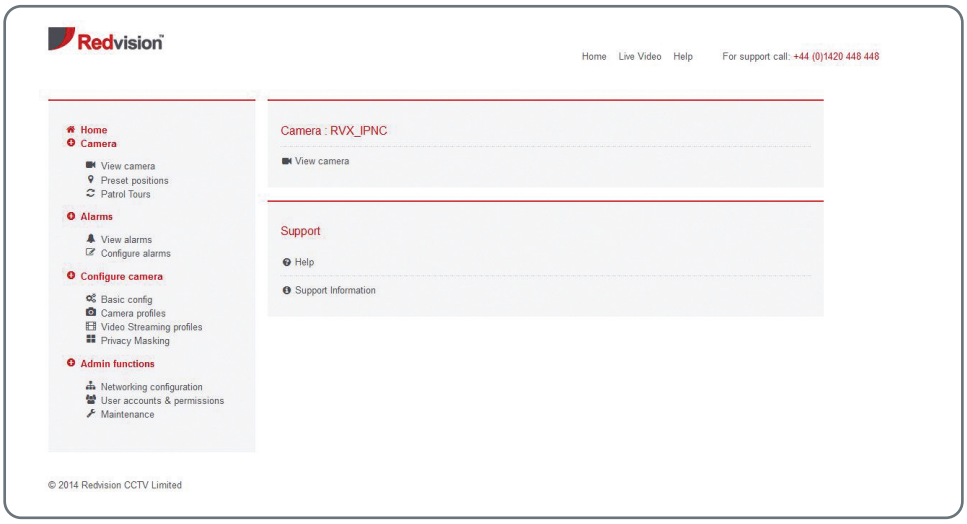
4.2 CAMERA CONFIGURATION VIA WEB INTERFACE

Note : Most javascript capable web browsers are supported for operation of the camera. Most testing is carried out using Firefox, but any mainstream browser should be suitable (Microsoft Internet Explorer, Google Chrome etc.).

To view video streams in the web browser, it may be necessary to install additional software. Consult 'Web Browser Configuration' in the Appendix of this document.

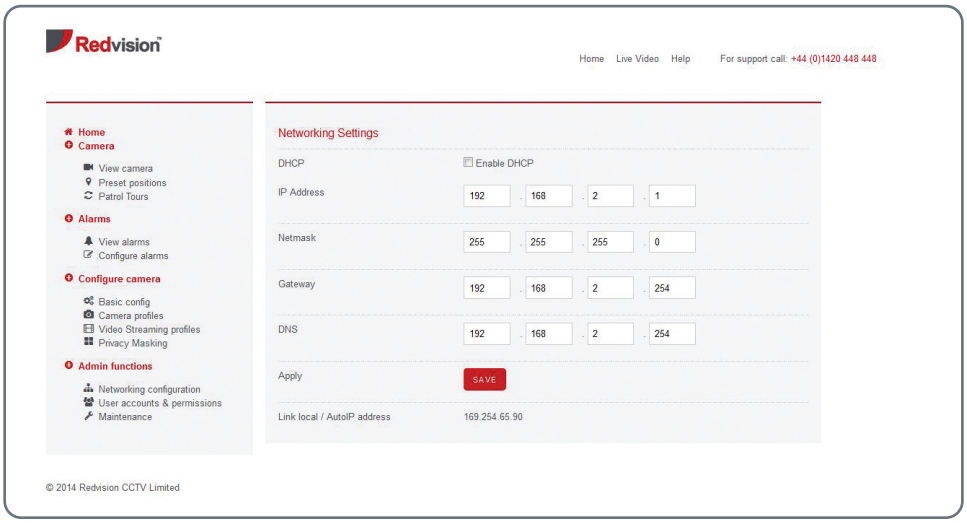
Open a web browser on a connected PC or other web-enabled device, and in the address bar enter the IP address as determined above :- e.g. http://192.168.2.1

After a short delay, the entry web page of the camera should appear.



Select 'Admin functions' > 'Networking configuration'.

(Administrator level login privileges will be required for access, the default admin account is Username 'admin', password '9999')



Enter the required network configuration information, or select 'Enable DHCP' as required. Note that once 'SAVE' is clicked to store the required configuration, the network interface will be reset and the setting will be changed as programmed. Change the network connection to the camera if required (i.e. if on a direct cable connection, but setting the camera for a DHCP network, change the network cabling over and if necessary power cycle the camera)

The camera should now be contactable via the network as configured.

4.3 User Account Configuration

User accounts should be configured for all authorised camera users who will have access to the web interface.

AS A MINIMUM THE PASSWORD FOR THE 'ADMIN' USER SHOULD BE CHANGED FROM THE DEFAULT VALUE.

Accounts can be created and edited from the 'Admin functions > User Accounts and Permission' page.

Three levels of access privilege are provided for accounts.

Viewer:	Can access live video streams only
Operator:	Can access all camera control functions
Administrator:	Can access all configuration pages

5 CAMERA OPERATION

Initial setup of the camera is most easily performed via the web interface, using a direct connection from a PC to the RJ45 socket in the power supply module. The camera may also be configured over the installation network.

5.1 OPERATION VIA WEB INTERFACE

The web interface provides the default method for setting all the main camera operational values, as well as a basic control system and video stream viewer. Using a javascript capable web browser, connect to the configured IP address as for the initial configuration.

5.2 OPERATION VIA CGI COMMAND

The RVX-IP dome will accept control via the network in the form of Common Gateway Interface queries. This is intended for use by third party devices to provide a dedicated interface channel. Consult Redvision CCTV for further information and the proprietary software development kit.

5.3 OPERATION VIA ONVIF INTERFACE.

ONVIF (Open Network Video Interface Forum – www.onvif.org) provides a standardised interface for interworking of devices from different manufacturers.

The RVX-IP dome is intended to be compliant to ONVIF Profile S as a Network Video Transmitter, and should be controllable by any Profile S compliant client device.

The ONVIF interface is enabled and discoverable on the local network by default. Consult the documentation for the client device for procedure for discovering and enabling NVT (Network Video Transmitter) hardware.

6 WEB INTERFACE

The layout of functions in the web interface is as follows :-

- **Home**
- **Camera**
  - View Camera
    - Live Streaming
    - Controls
    - Configure camera
  - Preset Positions
    - Edit Presets
  - Patrol Tours
    - Edit Tours
- **Alarms**
  - View Alarms
    - Live Alarms
      - Enable Live Update
      - Update Interval
      - Configure Alarms
        - Alarm Board
        - Wireless Alarms
  - Configure Camera
    - Basic config
    - Camera Profiles
      - Profile 1
      - Profile 2
      - Profile 3
      - Profile 4
      - Profile 5
    - Video Streaming profiles
  - Admin Functions
    - Networking configuration
    - User accounts & permissions
      - Add Users
      - Edit/Remove Users
    - Maintenance

6.1 HOME

6.1.1 CAMERA

This section contains the functions related to the normal operation of the camera, view video streams, PTZ control etc.

6.1.1.1 VIEW CAMERA

6.1.1.1.1 LIVE STREAMING

6.1.1.1.1.1 STREAMING OFF

Stop displaying video streams in the web interface.

6.1.1.1.1.2 PLAY STREAM 1

Shows the video stream from the camera primary output, along with connection information for use in other equipment or software.

6.1.1.1.1.3 PLAY STREAM 2

Shows the video stream from the camera secondary output, along with connection information for use in other equipment or software. This menu will only be visible if the camera is configured to generate 2 or more video streams.

6.1.1.1.1.4 PLAY STREAM 3

Shows the video stream from the camera tertiary output, along with connection information for use in other equipment or software. This menu will only be visible if the camera is configured to generate 3 video streams.

6.1.1.1.2 CONTROLS POPUP

Open a floating controls window for PTZ control of the camera.

6.1.1.1.3 CONFIGURE CAMERA

6.1.1.2 PRESET POSITIONS

6.1.1.2.1 EDIT PRESETS

Edit preset information for selected preset

6.1.1.3 PATROL TOURS

6.1.1.3.1 TOUR N

Run or Edit tour configurations.

6.1.2 ALARMS

6.1.2.1 VIEW ALARMS

6.1.2.1.1 LIVE ALARMS

View live alarm status messages

6.1.2.1.1.1 UPDATE INTERVAL

Change the rate at which the web interface checks the alarm status.

6.1.2.1.2 CONFIGURE ALARMS

6.1.2.1.2.1 ALARM BOARD

Edit configuration of individual alarm channels, where fitted.

6.1.2.1.2.2 WIRELESS ALARMS

Edit configuration of individual wireless (PIR) alarm channels, where fitted.

6.1.3 CONFIGURE CAMERA

6.1.3.1 BASIC CONFIG

[25/50 – 30/60 Setting]

6.1.3.1.1 CAMERA TITLE

This is a simple title for the camera, making it easier to identify the correct camera in multi unit installations.

6.1.3.1.2 MOUNTING ORIENTATION

Defines the mounting arrangement for the camera. This will affect the output video picture and pan/tilt movement direction of the camera.

6.1.3.1.3 INSTALLATION NOTES

Allows the installer to include any short note relating to the camera installation, such as exact location, cable identification etc.

6.1.3.1.4 TIME & DATE SETTING

It is important that the camera time and date are correctly set. A camera reporting incorrect date and time information may be rejected by a NVR or controller for security reasons.

Time and date may be automatically set from a network time server, called an NTP Server, either on the local network or accessed via the internet if a connection is available. This process may be scheduled to run only at power-up, or automatically once per day to ensure continued accuracy. The Server Address must be correctly set for this process to succeed.

HINT: *For security reasons, the preferred option would be to connect to a local timeserver on the network. Consult your network manager for connection information. In the event that a local network timeserver is not available, then a public timeserver on the internet may be used if the local network configuration allows it.*

Likely addresses would be uk.pool.ntp.org for UK installed cameras or more generally pool.ntp.org, either of which will return a connection to a randomly assigned time server located in, or close to, the installation country.

Setting time and date via an NTP server is the preferred option where possible. However, in cases where this is not possible, time and date must be manually set up.on each camera. This may be done quickly set from the device running the web browser. Note that it is important that the timezone settings of this device are set correctly, or the time setting in the camera will not be correct. In the event that the displayed browser time is not correct, then the time and date can be manually entered.

In the event of power failure, the RVX-IP camera will keep time for a short period, up to about 4 hours.

6.1.3.1.5 CAMERA PROFILES

This section selects which set of camera settings to use for the default 'day' and 'night' mode. See the 'Camera Profiles' section for more information on the use of profiles.

Day Night switching may be performed manually, e.g. via the web interface or by the use of 'special' preset selection, or according to the camera metered light level.

There are two 'slider' controls for setting the metered light level for switching into night mode, and into day mode.

If these values are set too close together, the camera may toggle back and forth between modes. If set too far apart, then the camera may become locked into one mode or the other if the threshold value is never reached.

The current metered light level value is reported on screen to assist in setting suitable values.

An additional slider control 'Switching Delay' sets the time for which the light level must be maintained over the threshold before switching is carried out. This prevents the camera mode from being changed by passing car headlights, or looking into a dark corridor during a tour.

Capture Framerate sets the video timebase selection for the camera imager. The selection choice is between 30fps (60fps in high speed capture modes), or 25fps (50fps in high speed capture modes). Generally speaking, 25/50 mode will be preferably in European installations to eliminate flicker from mains powered lighting, and 30/60 mode in US installations (where the mains frequency is 60Hz).

6.1.3.1.6 RESTORE/HOME POSITION

The camera may be set to automatically return to a preset position or commence a predefined tour, if there has been no manual control input for a period of time.

6.1.3.1.7 CONTROL CONFIGURATION

The Joystick Speed Scaling control adjusts the overall speed range for pan and tilt operations, both from the web interface and via ONVIF control systems. This is most useful for onvif clients which don't offer speed adjsutment for their PTZ controls.

If 'Datum Check' is selected, the camera will automatically check the calibration of the pan and tilt position, and exercise the motor mechanisms, once per day at a pre-determined time.

This option is useful for cameras where external disturbance is occasionally a problem, or where the camera operates largely on automatic tour over only a small movement range, to prevent uneven wear occurring in the long term.

PTZ Power Saving mode reduces the power supplied to the pan and tilt motors when the camera is not moving. This reduces overall power consumption and helps to reduce the internal camera temperature to improve reliability.
In circumstances where external interference with the camera position is likely, then switching off the power saving feature increases the camera resistance to movement when parked.

6.1.3.2 SHORTCUTS

Selecting a numbered preset as a shortcut activates the named function instead of moving to a defined position. Shortcut preset settings are provided for the following functions:-

- Wash (Only available with the Alarm PSU option)
- Wiper (if fitted)
- Day / Night Mode Toggle

6.1.3.2.1 CAMERA PROFILE OVERRIDE

Preset memories can be selected to allow quick access to camera profiles 1-5. Each preset is a toggle action (selecting once forces a profile switch, selecting a second time returns to normal operation mode).

In addition, a 'Cancel Profile' preset can be selected if required.

6.1.3.3 CAMERA PROFILES

6.1.3.3.1 BASE FEATURES

These features are applied globally to all camera profiles.

- Invert Image – Flip the output video images vertically (Top to Bottom)
- Mirror Image – Flip the output video images horizontally (Left to Right)

NOTE: These settings are usually only used in special circumstances. Before using these settings, ensure that the installation setting Configure Camera > Basic Config > Orientation has beencorrectly specified.

6.1.3.3.2 CAMERA PROFILE

There are five different camera profiles available to the user. Each can be set to optimise the camera performance for a particular situation. By default the profiles are named as follows :-

- Daytime
- Indoors
- Low-Light
- Zero-Light
- User

The factory default settings for each profile are pre-set to give broadly the best performance in each situation, but each can be renamed and modified to suit individual customer requirements.

For each profile, the following settings exist :-

- Profile Name – The profile name can be changed to indicate intended use.
- Profile Default – Reset the individual profile to factory default settings
- Lamp Mode – Select OFF / IR / WHITE lamp operation (model dependant)
- Auto Focus (Joystick) – Select if the camera should auto focus when operating under joystick control.
- Auto Focus (Preset/Tour) – Select if the camera should auto focus after moving to a preset, or moving to each preset stage of a tour. The camera will always move to the stored focus position as each stage, but then remian in manual focus or return to automatic focussing.
- Backlight Compensation – Improves visible detail by compensating for the dark exposure produced when viewing an object against a brightly lit background field.
- Digital Zoom – Allows the optical zoom lens to be supplemented by cropping the picture to produce apparent additional zoom.
- IR Cut Filter – In 'Visible Light' mode, the IR Cut filter prevents infra red light from reaching the lens, producing a full colour, sharply focussed image. In 'IR Light' mode, the camera produces a monochrome image from all available light, both visible and infra-red. This is the most sensitive mode for the camera, and is usually used with IR lamps.
- IR Focus Correction – When operating in IR mode, if there is significant visible light present, the image produced may appear out of focus. This is caused by the lens focussing IR light slightly differently to visible light. IR Focus Correction sets the camera focussing to be correct for either Visible Light or for IR Light, according to user preference.
- Image Stabiliser – When ON, the camera applies full time digital processing to the output video, to remove shake caused by small camera movements (e.g. in windy locations). This setting is disabled when the camera is moving, and re-enabled when stopped.
- Spot AE Metering – If ON, the image exposure is calculated from the centre of the picture only (to produce best detail of the object of interest in a manually controlled camera). If OFF, the exposure calculation uses the entire image (producing the best average image on an automatically touring camera).
- AE Mode – In 'AUTO' mode, the camera exposure is calculated for the best overall compromise between the various settings (Shutter Speed / Aperture / Gain). In 'Shutter Speed Priority' mode, the camera will hold on to the specified shutter speed as long as possible by adjusting the Aperture and Gain settings first. This is useful where a high shutter speed is desirable (fast moving targets) at the cost of a more grainy image in low light conditions.
- Shutter – Select the preferred shutter speed when 'AE Mode' is set to 'Shutter Speed Priority'.
- AF Sensitivity – In 'LOW' sensitivity mode, the camera requires a larger focus error before triggering an auto-focus action – this prevents the camera from continuously refocussing ('focus hunting') in certain situations.
- Aperture (Edge/Sharpness Enhance) – Select the degree of edge enhancement (sharpness) the camera applies to the video image.
- Defog – When selected, tries to compensate for fog or mist in the camera image by digital post processing.
- Exposure Compensation – Adjust the default exposure setting of the camera to lighten or darken the typical image produced. A range of -7 to +7 'stops' is allowed. One 'stop' represents one step in the shutter speed, or lens aperture setting.
- Gamma – Selects the colour compensation curve used by the camera, between 'Standard' and 'Straight' curves.
- High Res – Set the video output to enhance the fine detail contained.

- High Sensitivity – Setup the camera to give the highest light sensitivity possible, may produce a more grainy picture.
- Noise Reduction – when selected, the output video is processed to remove speckling and noise under low light conditions. The setting may be applied differently in moving and parked situations.
- White Bal – Adjusts the colour palette of the video picture to suit different lighting conditions. Auto Tracing modes will automatically compensate for changing lighting levels.
- Colour/Mono Effect – Sets the output video picture to colour or monochrome. This is only effective when IR Cut Filter is set to 'Visible Light' mode. It has no effect when operating the camera in infra-red mode.
- Crosshair – Applies a 'gunsight' crosshair to the output video image.

6.1.3.4 VIDEO STREAMING PROFILES

Set up the camera streaming settings to suit operational requirements. Up to three streams may be generated in various resolutions and formats. Due to hardware limitations, not all combinations of encoder type and image size are available. Output bandwidths for each stream may be adjusted individually to suit quality and network requirements.

Stream 1 bandwidth may be adjusted between 500kbps and 8000kbps

Streams 2/3 may be adjusted between 64kbps and 4000kbps

In MJPEG streams, bandwidth selection is accomplished by selecting a target image quality, in the range 5 – 98%

The RTSP port numbers for each stream may be changed from the camera default if required. This is most useful for clients which expect a primary RTSP stream on port 554. The port numbers selected will be reflected in the stream URI links provided via the web interface, and via the ONVIF control interface. A system reboot will be required.

Note : Each stream number must be unique. The RVX-IP dome does not currently support composite streams supplying multiple video channels within a single stream.

The default port numbers as delivered are 8557 for Stream 1, 8555 for Stream 2, and 8556 for Stream 3.

6.1.4 ADMIN FUNCTIONS

6.1.4.1 NETWORKING CONFIGURATION

Set the network configuration to suit the local installation requirements. Be aware that choosing invalid settings here may render the camera unuseable until re-configured locally.

6.1.4.2 USER ACCOUNTS & PERMISSIONS

6.1.4.2.1 ADD USERS

Create new user logins for camera, with various levels of authority.

6.1.4.2.2 EDIT/REMOVE USERS

Edit or delete existing camera user accounts.

6.1.4.3 MAINTENANCE

The Maintenance menu includes tools to reset various camera configurations.

6.1.4.3.1 REBOOT CAMERA

Restarts the main camera software from a 'power on' state. This may be useful if the camera behaviour is inccorect after a configuration change.

6.1.4.3.2 RESET ONVIF PROFILES

Some DVR's and controllers can set conflicting configurations in ONVIF profiles This option returns the ONVIF camera profile configurations to their default settings. A reboot operation will be required after using this option.

6.1.4.3.3 RUN DATUM NOW

This allows the operator to force the camera to carry out a datum check, and exercise the mechanism through a full range of movements. Upon completion of datum check, the status for Pan and Tilt axis movement is displayed, and the dome will return to the last parked position. (This may take up to 60 seconds once the datum check is complete).

6.1.4.3.4 RESET TO DEFAULTS

Reset all user configurations to factory default settings. Network settings and user logins/passords are all reset. A reboot is required to complete the operation.

6.1.4.3.5 FIRMWARE UPGRADE

Note that firmware upgrade via the web interface requires that port 8080 be accessible on the camera. This may require firewall settings to be changed on the user network.

HINT: *Firmware upgrade option appears in the left hand menu box once 'Maintenance' has been selected.*

This option should be used with care, since if improperly carried out, the camera may be rendered inoperable and require servicing by Redvision CCTV to restore operation. Also note that for in-service cameras, stored information such as Preset positions and Tour settings may be lost.

Firmware upgrades are usually supplied as '.zip' compressed files. These files need to be 'unzipped' to a temporary folder before upload to the camera.

Each .zip file will contain the following files (exact filenames will be different for each firmware version) :-

- rvxip_fs_B03f_2014_10_22.bin - the firmware upgrade binary image
- rvxip_fs_B03f_2014_10_22.bin.sfv - Checksum file
- release_notes_RXVIP_B03f.pdf - Release notes for the firmware versions
- gfsw.exe - Simple file integrity checker

(http://esrg.sourceforge.net/utils_win_up/md5sum/)

Where possible, the firmware upgrade image should be checked before uploading to the camera. Various software such as anti-virus tools and email firewall can corrupt binary image files. The checksum file contains a key value, calculated from an original image file. If the key is re-calculated from the supplied binary image, it will be different if the image file has been modified in any way.

From Windows Explorer, browse to the temporary folder containing the unzipped files. Open the checksum file (e.g. rvxip_fs_B03f_2014_10_22.bin.sfv) with a text editor such as Windows Notepad. The file contains a single line of text, listing the file name of the firmware image, and a hexadecimal number as a check. Note the checksum value.

e.g. rvxip_fs_B03f_2014_10_22.bin e4e08827

Run the file integrity checker program gfsw.exe (double click on it), then drag and drop the firmware image file (rvxip_fs_B03f_2014_10_22.bin) onto the message window.

After a few seconds, the window will display '------ FILE SIGNATURE COMPLETE --------'. Just above this will be a line beginning “CRC-32:”.

If the checksum value on this line as the one read from the checksum file, then the binary image file is intact. (For this check, the case of letters is not important, so 'e4e08827' is the same as 'E4E08827'

If the number calculated is different, DO NOT upload the file to the camera, contact Redvision for a replacement upgrade file.

NOTE: It is not necessary to use the supplied gfsw.exe program, any utility program which calculates a CRC-32 value for a file should produce the same checksum value.

From the home page of the camera web interface, select 'Support Information in the centre panel'.

Note the following information, which may be required in the event that a firmware upgrade introduces a new problem.

Kernel Build : _____
Encoder Build : _____
PTZ Build : _____
Serial Number : _____

HINT: *In the Firefox web browser, simply 'right click' and select 'Save Page As' to record the complete contents of the page. Give the page a unique name, and save as '.htm' file.*

Select the 'Browse' button, and navigate to the firmware upgrade file (e.g. “rvxip_fs_B03f_2014_10_22.bin”). Select the 'Upload' option and follow on-screen instructions.

The camera will prompt the user to reboot at the completion of the upgrade process.

7 WEB INTERFACE CONFIGURATION

Any modern, standards compliant web browser is suitable for carrying out basic configuration of the RVX-IP Camera. It may be necessary to install additional software tools to gain full functionality. The preferred web browser software is Mozilla Firefox, version 32.0.1 or later.

7.1 JAVASCRIPT

Javascript must be enabled to obtain full functionality. In Firefox, the support for Javascript is enabled by default. If the camera web pages report 'Please enable Javascript' then support has been intentionally disabled in some way.

Caution : The following procedure, if carried out incorrectly, may prevent Firefox from working correctly. Follow the instructions carefully.

In the address bar of Firefox, enter:

about:config

Read and inwardly digest the dire warnings, then click “I'll be careful, I promise!”.
In the Search bar at the top of the page, enter:

javascript.enabled

In the short list that results, for the item 'javascript.enabled', ensure the 'value' field is set to 'true'. If it is set to 'false', then double click on the field to toggle its value.

Close the page and return to the web interface. If the web interface is still requesting javascript support, then the wbe page is most likely being blocked an 'add-on' security tool such as NoScript. From the 'Tools' menu item, select 'Add-ons', then check the list of additions under 'Extensions' and 'Plugins' for any tools which block javascript actions, and adjust the settings as required.

7.2 VIDEO STREAMING PLUGIN

In order to view the live video streams embedded in the web browser, Redvision CCTV uses 'VLC media player', a free, open source media player which is available for most common systems at http://videolan.org

Download and install the media player application for your system type.

For best performance, follow these instructions :-

Run the VLC media player application.

Select Tools > Preferences from the menu bar.

In the 'Advanced Preferences' popup, under 'Show settings', select 'All'

Select 'Input / Codecs', scroll down the list to 'Advanced'.

Set the following values :-

Network Caching = 300

Click 'Save' then close the application.

HINT: *this value reduces the video latency – the time delay between live action and displayed video. It can be reduced further, but video 'breakup' becomes more likely, or increased to improve displayed video quality. 250 mSec is a sensible minimum value, and there is little or no benefit increasing the value past 1000 mSec.*

In Firefox, select Tools > Add-ons from the menu bar. In the search box, enter VLC, then select 'VLC Web Plugin' and install it.

At this point, direct the web browser to the camera web interface and select Camera > ViewCamera > Live Streaming > Play Stream 1 This should display the camera live video after a short delay.

At the bottom of the page, selecting the link address following 'Main Stream RTSP Link:' should launch the standalone VLC media player and display the live video feed. If instead, a message similar to 'Firefox does not know how to open RTSP files' is displayed, then follow these steps :-

In the address bar of Firefox, enter

about:config

Read and inwardly digest the dire warnings, then click “I'll be careful, I promise!”.

In the list view, right click and select New > Boolean

For 'Preference Name' enter 'network.protocol-handler.expose.rtsp' and set the value to 'False'

Close the page, and return to the camera live streaming page.

Click on the RTSP link again, Firefox should launch a 'Launch Application' dialog. Click 'Choose', and navigate to the VLC Media Player application. This is probably located at 'Computer > Local Disk (C:) > Program Files (x86) > VideoLAN > VLC' and called 'vlc.exe'.

Click 'Open', then tick the box 'Remember my choice for rtsp links.', then click 'OK'.

Retry the RTSP link if necessary, Firefox should now open the VLC standalone player.

In some cases the above procedure will not work on PCs running Windows. In this case, it may be necessary to add a 'key' to the Windows Registry to indicate the required action. Some hints are provided at “Making Windows handle RTSP URLs” at the NCSA IT Services wiki. (https://wiki.ncsa.illinois.edu/display/ITS/Making+Windows+handle+RTSP+URLs).

In short, create a file in Notepad, containing the following text:-

```
Windows Registry Editor Version 5.00

[HKEY_CLASSES_ROOT\rtsp]
@="Real Time Streaming Protocol"

"URL Protocol"=""
[HKEY_CLASSES_ROOT\rtsp\shell]
[HKEY_CLASSES_ROOT\rtsp\shell\open]
[HKEY_CLASSES_ROOT\rtsp\shell\open\command]
@="\"C:\\Program Files\\VideoLan\\VLC\\vlc.exe\"%1"
```

Save the file as 'rtsp.reg' and save it on the desktop. Double click the icon and follow the instructions to add it to the Windows Registry. This should then allow the web browser to correctly handle RTSP video links.

8 TECHNICAL SPECIFICATION

CAMERA

Image sensor	Sony 1/3" CCD
Model	FCB-EH7500
Optical zoom	30x
Digital zoom	12x
Horizontal resolution	1920px (1080p) / 1280px (720p)
Angle of view	~ 2.3 to 63.7deg.
Focal Length	4.3mm to 129mm (f1.6 to f4.7)
Min illumination	0.35 lx (1/30 sec ICR OFF) 0.002lx (1/4sec ICR ON)

TELEMETRY

LAN	Ethernet 100BaseT via Cat5, RJ45 connector
RS485	Via LAN ethernet, dedicated connection for Alarm unit only.

MECHANICAL

Left & Right Pan Limit	Programmable
Pan & Tilt	Continuous 360 Pan (0.1-200 per second). Tilt +60° to -90° depending on set up.

INFRA RED ILLUMINATION (RVX-IR versions)

IR wavelength	850nm (semi covert)
IR range	Tested to 100m (850nm)

KEY FEATURES

Presets/Tours	100 presets with programmable 940nm covert wavelength available to special order titles & 8 tours with programmable titles
Password protection	Yes (three levels)
Camera titles	16 alphanumeric characters
Preset titles	16 alphanumeric characters
Privacy zones	up to 16 available.
Alarm handling	Weekend/weekday time schedules for enabling/disabling alarms
Heater	Yes
Fan	Yes

ENVIRONMENTAL & PHYSICAL

Camera head material	Die cast aluminium
Window	Flat toughened glass
Operating temperature	-35°C to 50°C heater/Fan
Camera head Weight	6.5 Kilos
Paint finish	Powder coat
IP Rating	IP67

WARNING: THIS IS A CLASS A PRODUCT. IF INSTALLED IN A STATIC ENVIRONMENT RADIO INTERFERENCE MAY BE CAUSED IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

WIPER (Optionally available on all models)

Intermittent and Wiper Time Out

OPTIONAL ALARM MODULE

Features	16 Alarm inputs (volt free). 3 Relay Outputs: AUX, ALARM & WASH

POWER CONSUMPTION

Input	110V to 240Vac, 50MZ @ 0.3A
Output	24V DC @ 2.5A output
Power Consumption	2.5A at 48VA

MOUNTING BRACKETS

Type Swan, pedestal (tower mount) wall, corner, pendant & pole clamp.

This product is CE marked and has been fully tested and complies with:

- 2004/108/eec Electromagnetic Compatibility
- 73/23/eec Low Voltage Directives
- 60950: 2006 Safety Standards

15 WARRANTY INFORMATION

Redvision CCTV Limited (Redvision) warrants the buyer that the product will, on the date of shipment be free from defects in material & workmanship and will conform to Redvision's specifications provided to the buyer. If any defect in material or workmanship appears in the product, Redvision will at its option, either repair or replace the defective product without charge at Redvision's customer service centre or serviced authorised repair facility or credit or refund the purchase price of the defective product provided;

- The defect appears within 24 months from the date of purchase by the end user
- Examination of the product confirms that the claimed defect actually exists.

BUYER SHALL FOLLOW REDVISION'S INSTRUCTIONS REGARDING RETURN OF THE DEFECTIVE PRODUCT AND NO PRODUCT WILL BE ACCEPTED FOR REPAIR, REPLACEMENT, CREDIT OR REFUND WITHOUT THE WRITTEN AUTHORISATION OF REDVISION OR IN ACCORDANCE WITH REDVISION'S WRITTEN INSTRUCTIONS. IN THE CASE OF ANY SUCH RETURN THE BUYER SHALL BEAR THE RISK OF LOSS OR DAMAGE AND SHALL PREPAY ALL TRANSPORTATION CHARGES TO REDVISION. REPAIRED OR REPLACEMENT PRODUCT WILL BE SHIPPED WITH FREIGHT PREPAID BY REDVISION AND THE BUYER SHALL BEAR THE RISK OF LOSS OR DAMAGE. THE REPLACED PRODUCT SHALL BECOME REDVISION'S PROPERTY.

In no event shall Redvision be responsible for de-installation or reinstallation of the product or for the expenses thereof. If it is determined that product is not defective, the buyer shall pay Redvision all costs of handling, inspection, repairs and transportation at Redvision's then prevailing rates.

Repairs and replacements covered by the above warranty are warranted to be free from defects as set forth above except that the defect must appear;

- Within three (3) months from the date of repair or replacement; or
- Prior to the expiration of the above twenty four (24) month period, whichever is later.

With respect to product not manufactured by Redvision, to the extent permitted, extends the warranties and affords the remedies to the buyer given to Redvision by its vendor of said products. The foregoing warranties do not extend;

- To expendable items
- To experimental or development products
- To product which has been subjected to misuse, neglect, accident or abuse;
- To the unauthorised repair or alteration by anyone other than Redvision;
- To improper installation, storage or maintenance by anyone other than Redvision;
- To product used in material violation of Redvision's instruction; or
- To product which has had its serial numbers or month and year of manufacture or shipment removed, defaced or altered or
- To software.

The term "software" means a set of logical instructions and table of information which guide the functioning of a processor.

Such set may be contained in any medium whatsoever including, without limitation, hardware containing a pattern of bits representing such set, provided, however, the term "software" does not mean or include the medium.

Redvision shall charge for the repair of all product returned out of warranty

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call Redvision Customer Service **+44 (0) 1420 448 448** for an RMA number.

or visit www.redvisioncctv.com for more information.

Due to a policy of continuous product development the content of this manual may change without notice. Redvision CCTV Limited will endeavour to ensure the latest version is made available through the download section on its website www.redvisioncctv.com. Copyright © 2008 - 2015 Redvision CCTV Limited. All rights reserved. Redvision CCTV, the Redvision Logo, Redvision X-series™ RV Camera Series™, Redzone™ IR Illuminator are trademarks or registered trademarks of Redvision CCTV Limited.

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X-IP-SERIES

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